

IN THE CLAIMS:

Please CANCEL claims 5-7 and 15 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claim 1, and ADD new claims 16-20, as follows. Note that all the claims currently pending in this application, including those not currently being amended, have been reproduced below for the Examiner's convenience.

1. (Currently Amended) An exposure apparatus for illuminating a reticle with exposing light from an exposing light source via an illuminating optical system and projecting a pattern, which has been formed on the reticle, onto a substrate via a projection optical system, said apparatus comprising:

a vessel within which one of the illumination optical system and the projection optical system is placed;

gas supplying means for supplying a desired gas to said vessel;

vacuum exhaust means for vacuum evacuating said vessel in order to establish negative pressure in the interior thereof from atmospheric pressure; and

~~a pressure valve for preventing control means for controlling a differential pressure between an internal pressure of said vessel and an atmospheric pressure from exceeding a predetermined value the atmospheric pressure so as not to exceed a differential pressure constant.~~

2. (Previously Amended) The apparatus according to claim 1, wherein the desired gas is one of an inert gas and a specific active gas.

3. (Previously Amended) The apparatus according to claim 1, wherein said vacuum exhaust means comprises a vacuum source for creating a vacuum in said vessel, and a vacuum-pressure controller for controlling pressure within said vessel, wherein said vacuum-pressure controller is provided in piping leading from said vessel to said vacuum source.

4. (Previously Amended) The apparatus according to claim 3, further comprising:
a densitometer for measuring concentration of the gas in said vessel;
atmosphere-release means for atmosphere-releasing to said vessel exhaust gas within said vessel; and
changeover means for switching a gas exhaust line from said vacuum exhaust means to said atmosphere-release means if concentration of gas in said vessel attains a predetermined concentration.

5-7. (Cancelled)

8. (Previously Amended) The apparatus according to claim 1, further comprising a display, a network interface and a computer for running network software,

wherein maintenance information relative to said exposure apparatus is capable of being communicated via a computer network.

9. (Original) The apparatus according to claim 8, wherein the network software provides said display with a user interface for accessing a maintenance database, which is connected to an external network of a plant at which said exposure apparatus has been installed, and which is provided by a vendor or user of the exposure apparatus, thereby making it possible to obtain information from said database via said external network.

10. (Currently Amended) A method of manufacturing a semiconductor device, said method comprising the steps of:

placing a group of manufacturing equipment, including an exposure apparatus for performing various processes, in a plant for manufacturing semiconductor devices; and manufacturing a semiconductor device by performing a plurality of processes using the group of manufacturing equipment,

wherein said exposure apparatus includes:

a vessel within which one of an illuminating optical system and a projection optical system is placed;

gas supplying means for supplying a desired gas to said vessel;
vacuum exhaust means for vacuum evacuating said vessel in order to establish negative pressure in the interior thereof from atmospheric pressure; and

~~a pressure valve for preventing control means for controlling a differential pressure between an internal pressure of said vessel and an atmospheric pressure from exceeding a predetermined value the atmospheric pressure so as not to exceed a differential pressure constant.~~

11. (Original) The method according to claim 10, further comprising:

interconnecting the group of manufacturing equipment by a local-area network;

and

communicating, by data communication, information relating to at least one piece of manufacturing equipment in said group thereof between the local-area network and an external network outside said plant.

12. (Previously Amended) The method according to claim 11, further comprising performing one of (i) obtaining maintenance information for said manufacturing equipment by accessing, by data communication via the external network, a database provided by a vendor or user of said exposure apparatus, and (ii) performing production management by data communication with a semiconductor manufacturing plant other than said first-mentioned semiconductor manufacturing plant via the external network.

13. (Currently Amended) A semiconductor manufacturing plant, comprising:

a group of manufacturing equipment, including an exposure apparatus, for performing various processes; and

a gateway for making it possible to access, from a local-area network, an external network outside the plant, whereby information relating to at least one of the pieces of manufacturing equipment can be communicated by data communication, wherein said exposure apparatus includes:

a vessel within which one of an illumination optical system and a projection optical system is placed;

gas supplying means for supplying a desired gas to said vessel;

vacuum exhaust means for vacuum evacuating said vessel in order to establish negative pressure in the interior thereof from atmospheric pressure; and

~~a pressure valve for preventing control means for controlling a differential pressure between an internal pressure of said vessel and an atmospheric pressure from exceeding a predetermined value the atmospheric pressure so as not to exceed a differential pressure constant.~~

14. (Currently Amended) A method of maintaining an exposure apparatus that has been installed in a semiconductor manufacturing plant, said method comprising the steps of:

providing a maintenance database, which is connected to an external network of the semiconductor manufacturing plant, by a vendor or user of the exposure apparatus;

allowing access to the maintenance database from within the semiconductor manufacturing plant via the external network; and

transmitting maintenance information, which is stored in the maintenance database, to the outside of the semiconductor manufacturing plant via the external network,

wherein said exposure apparatus includes:

a vessel within which one of an illuminating optical system and a projection optical system is placed;

gas supplying means for supplying a desired gas to the vessel;

vacuum exhaust means for vacuum evacuating said vessel in order to establish negative pressure in the interior thereof from atmospheric pressure; and

a pressure valve for preventing control means for controlling a differential pressure between an internal pressure of said vessel and an atmospheric pressure from exceeding a predetermined value the atmospheric pressure so as not to exceed a differential pressure constant.

15. (Cancelled)

16. (New) The apparatus according to claim 1, further comprising a pressure valve for preventing a differential pressure between the internal pressure of said vessel and the atmospheric pressure from exceeding from a predetermined value.

17. (New) The apparatus according to claim 16, wherein said pressure valve is a valve for atmosphere-releasing to reduce the internal pressure of said vessel.

18. (New) An exposure apparatus for illuminating a reticle with exposing light from an exposing light source via an illumination optical system and projecting a pattern, which has been formed on the reticle, onto a substrate via projection optical system, said apparatus comprising:

a vessel within which one of the illuminating optical system and the projection optical system is placed; and

gas supplying means for supplying a desired gas to said vessel;
vacuum exhaust means for vacuum evacuating said vessel in order to establish a negative pressure in the interior thereof from atmospheric pressure,

wherein said vacuum exhaust means evacuates an internal pressure of said vessel to pulsate the internal pressure at a predetermined frequency in a range from negative pressure to atmospheric pressure.

19. (New) An exposure method for illuminating a reticle with exposing light from an exposing light source via an illuminating optical system and projecting a pattern, which has formed on the reticle, onto a substrate via a projection optical system, said method comprising:

a gas supplying step of supplying a desired gas to a vessel within which one of the illuminating optical system and the projection optical system is placed;

a control step of controlling a differential pressure between the internal pressure of said vessel and the atmosphere so as not to exceed a differential pressure

constant when said vessel is vacuum evacuated in order to establish a negative pressure in the interior thereof from atmospheric pressure.

20. (New) An exposure method for illuminating a reticle with exposing light from an exposing light source via an illuminating optical system and projecting a pattern, which has been formed on the reticle, onto a substrate via a projection optical system, said method comprising:

a gas supplying step of supplying a desired gas to a vessel within which one of the illuminating optical system and the projection optical system is placed; and

an exhaust step of evacuating internal pressure of the vessel to pulsate the internal pressure at a predetermined frequency in a range from negative pressure to atmospheric pressure when the vessel is vacuum evacuated in order to establish a negative pressure in the interior thereof from atmospheric pressure.